Environmental Issues Committee
MD Department of the Environment

July 16, 2002
Minutes

Presentations at this meeting provided background information in two key areas related to environmental cancers in Maryland: 1) How well is Maryland identifying and monitoring for carcinogens in ambient air? and 2) Is it possible to identify occupational cancers using data derived from Maryland Occupational Safety and Health (MOSH) activities?

Air Toxics Monitoring in Maryland

Walter Cooney, from the Air and Radiation Management Administration of MDE, provided an overview of Maryland's air toxics monitoring program, which currently includes 1) VOC (volatile organic compound) sampling at four sites in central Maryland (reduced from eight sites last year), 2) sampling for ozone precursor hydrocarbons including carbonyl compounds at a Photochemical Assessment Monitoring Site (PAMS) in Essex, MD, and 3) Speciation sampling for particulate matter (PM2.5) at two sites (Essex and Ft. Meade). Results from these monitoring activities are entered into the national EPA AIRS database. Since Maryland's programs are integrated with EPA's national programs, there is minimal analysis of the data at the state level. New EPA standards are gradually being phased in based on data collected from around the country. A primary concern for Maryland is whether they have an adequate sampling network.

Ron Turner, of the Air Quality Planning Program within the Air and Radiation Management Administration of MDE, gave a presentation on the EPA National-scale Air Toxics Assessment (NATA) program (for further details see www.epa.gov/ttn/atw/nata). This program grew out of EPA's Integrated Air Toxics Strategy whose goal is to attain a 75% reduction in the incidence of cancer attributable to exposure to hazardous air pollutants from stationary sources and attain a substantial reduction in public health risks posed by AP emissions from area sources (small local sources such as dry cleaners). The overall focus is on reducing cumulative risk from stationary and mobile sources in urban areas. NATA modeling efforts for MD used 1996 emissions data for 33 air toxics (a subset of a larger list). Although there are problems with emissions data, the purpose of NATA modeling of cancer and non-cancer health effects of exposure to airborne chemicals is to help identify pollutants of greatest potential concern, thus helping regulatory agencies set priorities for collecting additional data to better address health risks. Limitations of this modeling effort include the fact that it: 1) models only chronic, inhalation exposures, 2) excludes indoor sources, 3) includes only 33 HAPs, 4) focuses on average exposures, not individual extremes and 5) includes only census-tract level calculations and county-level and higher presentations. Thus it cannot be used for making specific regulatory decisions in local areas. Results for Maryland do show that estimated risks for cancer are 1) typical for large populated metropolitan areas, 2) are similar to those estimated for other states in the mid-Atlantic and northeastern regions, 3) are primarily driven by emissions from mobile and background (cross boundary) sources, and 4) of the 33 NATA HAPs, 13 are of concern in Maryland. Ten HAPs were

estimated to present a cancer risk greater than one in a million, and two HAPs were estimated to present cancer risks greater than 10 in a million. Primary sources of HAPs of concern for Maryland include: on and off-road mobile sources (50%), background sources (35%), area sources (14%) and major stationary sources (1%). Federal programs to limit emissions have their basis in the Clean Air Act that requires EPA to develop MACT (maximum available control technology) standards to limit the emission of more than 188 toxic air pollutants. As of April, 2002, EPA has issued 52 standards for 89 different types of major industrial sources such as chemical plants, oil refineries, aerospace manufacturers and steel mills, and has established regulations for eight categories of areas sources, including dry cleaners, commercial sterilizers, secondary lead smelters, and chromium electroplating facilities. Working in conjunction with EPA, Maryland is formulating standard protocols for calculating emissions. EPA is asking states to prioritize emissions of concern. VOCs and ozone formation are being targeted at this time.

Limitations of this modeling effort are described on the NATA website. Dr. John Samet questioned the usefulness of this general monitoring approach for identifying individual risks of developing cancer from inhalation exposures. Studies have shown that personal exposures are related to a greater extent to personal activities (e.g., exposure to benzene from gasoline fumes while fueling a car or lawn mower). The exception to this may be polycyclic aromatic hydrocarbons (PAHs) and diesel exhaust components in ambient air.

Identification of Occupational Cancers

Bill Grabau, from Maryland Occupational Safety and Health (MOSH), reported that there are no available databases of occupational diseases that link workplace exposures to specific chemicals with health outcomes. MOSH doesn't track exposures by chemicals; rather they identify job codes (SIC codes), so it's difficult to look for over- exposures to specific carcinogens. MOSH enforces OSHA standards that consist of about 450 permissible exposure levels. Of these, about 13 are for known carcinogens. Within Maryland, exposure to asbestos and coke oven emissions are the only two work related exposures that have been identified as increasing a worker's risk of developing cancer. These have been significantly decreased.

The following ideas were put forth in response to the question: How can occupational cancers be identified? Occupational health surveillance has primarily concentrated on injuries, effects of noise, and diseases such as silicosis. It's difficult to retrospectively relate cancers to workplace exposures due to the long lag time in the development of cancer. MOSH only keeps records for specific cases for 10 years. Employers, however, are required to keep environmental sampling records for 30 years. Although it's difficult for OSHA to change its standards, new standards that are developed require medical surveillance, which could be helpful in the future. NCI has started conducting lifetime exposure history interviews as a means of doing retrospective assessments. Looking for unusual patterns in cancer incidence is also a good approach.

Maryland Cancer Registry

The following comments were presented by Stacey Neloms in response to references to the Maryland Cancer Registry that were made at the June 20th meeting in her absence.

Accessibility of MCR data: MCR data are more readily accessible to researchers than people think. Case-based data sets are provided to IRB-approved researchers on a frequent basis. The difficulties usually arise with the procedures that investigators need to go through to receive the data which involve: 1) obtaining IRB approval from both the home institution and the DHMH institutional review boards (IRBs) and 2) establishing an agreement between DHMH and the home institution prior to receiving confidential information.

Public Use Dataset (PUDS): Although release of a case-based data set is not allowed without DHMH-IRB approval, a draft PUDS has been developed in which certain fields are aggregated. This data set has been distributed for review.

Race Information: Contrary to comments at the June 20th meeting which suggested that race information in the MDR is not complete, the collection of race information for cases in the registry is 98% complete, as certified by the North American Association of Central Cancer Registries. Ethnicity information, however, is not as well collected.